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A Century of Progress in Swine Feeding

Richard C. Wahlstrom and George W. Libal

During the first 100 years of this country's history, the diet of pigs consisted of whatever was available for them to eat in the particular area where they were being produced. Experiments were first conducted in the area of swine feeding during the early 1900's. Since that time, thousands of experiments have been conducted to determine the nutritional requirements of the pig and the feeding value of literally hundreds of feed ingredients. Rate of gain and feed efficiency have both been improved about 50% during the past 50 years.

The feeding trial reported here was conducted to demonstrate the improvement in performance of pigs fed diets similar to those fed in 1900, 1930 and 1975.

Experimental Procedure

Fifteen crossbred weanling pigs consisting of five trios of littermates were utilized in this experiment. One pig from each trio was assigned to each treatment group. Group 1 animals received a corn-mineral diet designated as a 1900 diet, group 2 was fed a corn-tankage-salt diet called a 1930 diet and group 3 received a corn-soybean meal diet supplemented with minerals, vitamins and an antibiotic, a 1975 diet. The composition of the diets is shown in table 1.

The pigs averaged approximately 61 lb. initially. They were housed in uninsulated, wooden houses placed on concrete and had access to an outside 12 x 16 foot concrete pen where self-feeders and waterers were placed. The data reported here were for a 84-day feeding period.

Results

Average daily gain, feed consumption and feed/gain data are summarized for the 84-day period and shown in table 2. Average daily gains of 0.75, 1.38 and 1.70 lb. per day for pigs fed the 1900, 1930 and 1975 diets, respectively, indicate a real nutritional difference exists between these diets. It can be assumed that the differences in gains may have been even greater had the pigs been started at a lighter weight. Pigs fed the all corn-mineral, 1900 diet gained rather uniformly during the 84-day period, while pigs fed the modern day diet continued to increase in average daily gain as they grew. These pigs were essentially at market weight (204 lb.) and were just slightly over 5 months old. Their littermates fed the 1900 diet weighed only 123 lb. and, if they should continue to gain at their present rate, would be approximately 9 months old when they reach a comparable weight.

Feed efficiency also shows a marked difference between the 1900 diet and the other diets. It required 5.37 lb. of feed/gain for pigs fed the corn-mineral diet and only 3.61 or 3.62 lb. of feed/gain for pigs fed the 1930 or 1975 diets. It should be indicated that the 1975 diet was somewhat lower in protein than we would recommend during the beginning of the period and this may be a reason for the poorer feed efficiency of these pigs than normally obtained on pigs fed corn-soybean supplemented diets.

Summary

Five trios of littermate pigs were fed diets of corn-minerals (1900), corn-tankage-salt (1930) and corn-soybean meal-minerals-vitamins-anitbiotic (1975) for 84 days. Average daily gains were 0.75, 1.38 and 1.70, and feed/gains were 5.37, 3.61 and 3.62 for the pigs fed 1900, 1930 and 1975 diets, respectively. The data clearly demonstrate the improvement in performance through nutritional changes during this century.

Table 1. Composition of Diets (Percent)^a

| Ingredients | 1900 | 1930 | | 1975 | |
|---------------------|------|------------------|------------------|------------------|------------------|
| | | A | B | A | B |
| Ground yellow corn | 97.0 | 87.0 | 92.0 | 81.9 | 87.5 |
| Tankage, 50% | -- | 12.5 | 7.5 | -- | -- |
| Soybean meal, 44% | -- | -- | -- | 15.0 | 9.3 |
| Dicalcium phosphate | 2.0 | -- | -- | 1.2 | 1.3 |
| Ground limestone | 0.5 | -- | -- | 0.9 | 0.9 |
| Trace mineral salt | -- | 0.5 ^b | 0.5 ^b | 0.5 ^c | 0.5 ^c |
| White salt | 0.5 | -- | -- | -- | -- |
| Premix ^d | -- | -- | -- | 0.5 | 0.5 |

^aDiets A were fed to 120 lb. and diets B from 125 lb. to end of trial.

^bContained 0.35% zinc.

^cContained 0.8% zinc.

^dProvided per lb. of diet: vitamin A, 1500 IU; vitamin D, 150 IU; vitamin E, 5 IU; riboflavin, 1.25 mg; pantothenic acid, 5 mg; niacin, 8 mg; choline, 25 mg; vitamin B₁₂, 5 mcg and aureomycin, 10 milligrams.

Table 2. Performance of Pigs Fed Centennial Diets for 84 Days

| | Diet | | |
|-------------------------------|-------|-------|-------|
| | 1900 | 1930 | 1975 |
| Number of pigs ^a | 5 | 5 | 5 |
| Avg. initial weight, lb. | 60.0 | 60.6 | 61.0 |
| Avg. 84-day weight, lb. | 123.3 | 176.2 | 204.0 |
| Avg. daily gain, lb. | 0.75 | 1.38 | 1.70 |
| Avg. daily feed consumed, lb. | 4.04 | 4.97 | 6.16 |
| Feed/gain | 5.37 | 3.61 | 3.62 |

^aFive trios of littermate pigs, one pig died in 1900 group after 10 weeks.